

CLAIMS

What is claimed is:

Claim 1. A four pole torque motor comprising:
a rotor assembly having a magnetic device, a motor core and a motor
shaft;
a stator having four stator members, wherein said stator is disposed so as
to be surroundingly associated with said rotor assembly;
a single motor coil, wherein said motor coil is disposed so as to be
surroundingly associated with said stator; and
a motor housing having a housing body, wherein said housing body
defines a housing cavity for containing said rotor assembly, said stator and said motor
coil.

Claim 2. A four pole torque motor according to claim 1, wherein
said motor shaft is disposed so as to be non-movably associated with said motor core.

Claim 3. A four pole torque motor according to claim 1, wherein
said magnetic device is disposed so as to be non-movably associated with said motor
core.

Claim 4. A four pole torque motor according to claim 1, wherein
said magnetic device is a permanent magnet charged radially and having four
alternating poles.

Claim 5. A four pole torque motor according to claim 1, wherein
each of said four stator members are disposed so as to be perpendicularly adjacent with
two of said four stator members.

Claim 6. A four pole torque motor according to claim 1, wherein
each of said stator members include a stator cross-sectional area, stator top and a stator
base and wherein said stator members are shaped such that said stator cross-sectional
area is larger at said stator base than said stator top.

Claim 7. A four pole torque motor according to claim 6, wherein said stator cross-sectional area gradually increases from said stator top to said stator base.

Claim 8. A four pole torque motor according to claim 6, wherein said stator cross-sectional area gradually increases from said stator top to said stator base in the direction of a flux current path.

Claim 9. A four pole torque motor according to claim 1, wherein said motor coil includes a coil bobbin and a coil wire, wherein said coil wire is disposed so as to be wrapped around said coil bobbin.

Claim 10. A four pole torque motor according to claim 1, wherein said motor housing includes a top plate and a base plate, wherein said top plate and said base plate are disposed so as to be non-movably associated with said housing body so as to enclose said housing cavity.

Claim 11. A four pole torque motor according to claim 10, wherein said top plate includes a top plate receiving notch and wherein said base plate includes a base plate receiving notch.

Claim 12. A four pole torque motor according to claim 10, wherein said top plate defines a top plate shaft cavity and wherein said base plate defines a base plate shaft cavity, wherein said top plate shaft cavity and said base plate shaft cavity are disposed so as to allow communication with said motor shaft.

Claim 13. A four pole torque motor according to claim 12, further comprising a device bearing, wherein said device bearing is disposed within said base plate shaft cavity so as to be non-movably associated with said base plate and wherein said device bearing is disposed within said base plate shaft cavity so as to be rotatably associated with said motor shaft.

Claim 14. A four pole torque motor according to claim 11, wherein said housing body includes a body top and a body base, wherein said body top includes a protruding top edge and wherein said body base includes a protruding base edge.

Claim 15. A four pole torque motor according to claim 14, wherein when said top plate is non-movably associated with said housing body, said protruding top edge is disposed within said top plate receiving notch.

Claim 16. A four pole torque motor according to claim 14, wherein when said base plate is non-movably associated with said housing body, said protruding base edge is disposed within said base plate receiving notch.

Claim 17. A four pole torque motor comprising:
a rotor assembly having a magnetic device, a motor core and a motor shaft;

a stator having a stator member, wherein said stator is disposed so as to be surroundingly associated with said rotor assembly;

a motor coil, wherein said motor coil is disposed so as to be surroundingly associated with said stator; and

a motor housing having a housing body, wherein said housing body defines a housing cavity for containing said rotor assembly, said stator and said motor coil.

Claim 18. A four pole torque motor according to claim 17, wherein said stator includes four of said stator members, wherein each of said stator members are disposed so as to be perpendicularly adjacent with two of said stator members.

Claim 19. A four pole torque motor according to claim 17, wherein said each of stator members includes a stator cross-sectional area, a stator top and a stator base and wherein each of said stator members is shaped such that said stator cross-sectional area is larger at said stator base than said stator top.

Claim 20. A four pole torque motor according to claim 19, wherein said stator cross-sectional area gradually increases from said stator top to said stator base in the direction of a flux current path.